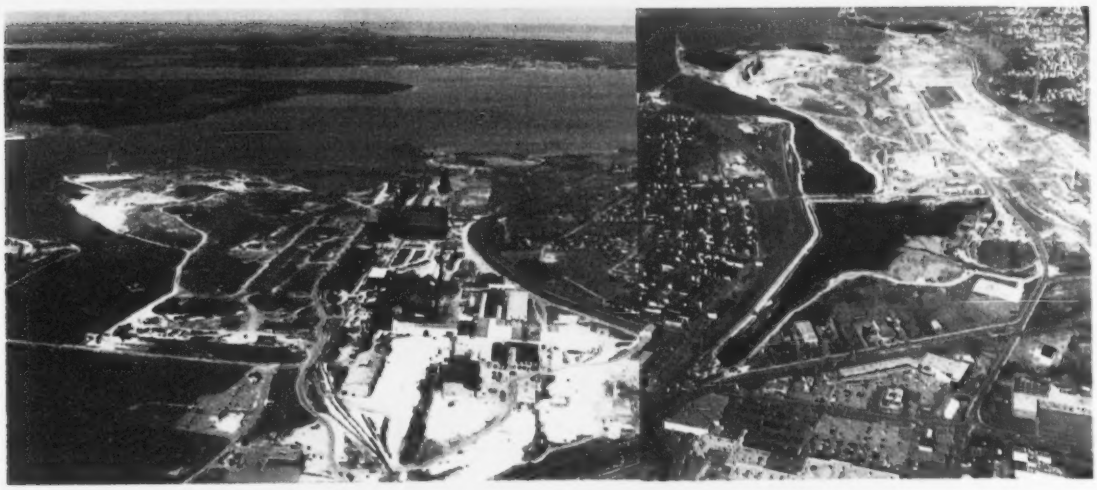
Sydney Tar Ponds and Coke Ovens Sites Remediation Project

Second Annual Report to the Minister, Nova Scotia Environment

Submitted by;

The Remediation Monitoring Oversight Board

May 17, 2010



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Executive Summary

On July 12, 2006, a Joint Review Panel completed an environmental assessment of the Sydney Tar Ponds and Coke Ovens Sites Remediation Project with the issuance of an Environmental Assessment Report. This report included a total of fifty-five recommendations of which number 53 dealt with the creation of a Tar Ponds and Coke Ovens, Remediation Monitoring Oversight Board. The Provincial Environment Minister, Mark Parent, moved forward with the Panel's recommendation and in January 2008 appointed a three-member Remediation Monitoring Oversight Board (RMOB).

Over the past two years, the Remediation Monitoring Oversight Board has been active in developing an understanding of the project and, in particular, evaluating the role and activities of NSE as the primary regulator for the Tar Pond and Coke Oven Remediation Project. Our first annual report was provided to the Environment Minister for his consideration in April of 2009. This, our second RMOB report, is provided for the consideration of Minister Sterling Belliveau.

In this report we have identified three key findings:

- Based on the information reviewed during the past year we continue to conclude that NSE is effectively regulating the project and enforcing the requirements included in their Part V approvals. We feel that the public should have confidence that the NSE is taking "due care" to protect the environment.

- We feel that NSE has appropriate staff and resources in place to effectively enforce their legislation and the requirements of their Part V approvals.

- NSE and the project partners have comprehensive programs in place to monitor the various project activities. While problems and mishaps are sure to arise, the level of oversight should ensure that problems or issues are quickly identified and that systems are in place to communicate and address these situations.

1. Introduction

The Sydney Tar Pond and Coke Ovens Sites Remediation Project is a very large-scale project with a substantial budget of approximately $400 million dollars. It aims to reduce the risk to both people and the environment in the Sydney area. The project will employ technologies which are new to Nova Scotia and which will be adapted to site-specific conditions. The planned completion date for the project is 2014.

The project is very high profile and as such has received a great deal of public scrutiny and media attention, as noted in both the joint panel report and the ongoing media coverage. The level of attention has created a great deal of pressure on all the government departments and private companies involved to ensure that the project is done right, on time, and within budget. It should be noted that few, if any, projects in Nova Scotia or possibly elsewhere in Canada have received the level of effort and specialized attention by government and industry as elicited in this case. In addition few, if any, projects receive this level of on-site compliance and environmental quality monitoring.

The Panel report identified that "*the main regulatory responsibility for the ongoing Project lies with the Province*" and "*Nova Scotia Environment and Labour*" (now NSE) will be "*the lead provincial department for environmental protection*". As the lead provincial regulator, NSE is responsible for issuing permits and approvals and is also "*responsible for compliance monitoring and responding to environmental emergencies*".

In addition to NSE, a the number of other organizations are involved in the planning and implementation of this project including Public Works and Government Services Canada (PWGSC), Nova Scotia Transportation and Infrastructure Renewal (NSTIR), the Sydney Tar Ponds Agency (STPA), the Independent Engineer (IE), AECOM, Environment Canada (EC), the Environmental Management Committee (EMC) and the Community Liaison Committee (CLC). Each of these organizations has different mandates and interests.

2. Background

In January of 2008 Mark Parent, the Provincial Environment Minister responded to the Joint Panel's recommendation and appointed a three-member Remediation Monitoring Oversight Board (RMOB), consisting of the following individuals:

Sinclair Dewis, Chair
Colin Hines, Member, and
Edwin MacLellan, Member

The RMOB was provided with Terms of Reference by the Minister which is described in Appendix E of the Nova Scotia Response to the Joint Panel Review Environmental Assessment. This states that "*the purpose of the RMOB is to ensure public confidence that the remediation is being appropriately regulated by Nova Scotia Environment and is proceeding within approved regulatory guidelines, permits and approvals*". Further, the RMOB will report on the progress and effectiveness of NSE's regulatory management process for the project. The key responsibilities of the RMOB include:

- reviewing project permits and approvals issued by NSE;
- reviewing any project regulatory issues that arise;
- taking public input into account and providing the public with the opportunity to provide feedback on regulatory issues;
- reporting annually to the Minister on project regulatory management issues.

In April 2009 the RMOB submitted its first report to David Morse, the Minister of Environment at that time. The report provided an overview of the Board's activities and identified four key findings relating to NSE as regulator, NSE capacity, interagency communications and the Memorandum of Agreement relating to regulatory issues.

This, our second report has been prepared for the consideration of Mr. Sterling Belliveau, the Minister of Environment and provides an overview of our activities and findings during the past year.

3. Approach

During our second year, the Remediation Monitoring Oversight Board remained active in developing an understanding of the project and, in particular, evaluating the role and activities of NSE. Our approach has included:

- convening two RMOB meetings in Sydney (November 19-20, 2009 and January 28-29, 2010);
- conducting nine interviews with NSE staff and key project partners including representatives from PWGSC, STPA, the IE, AECOM, and EC;
- reviewing various NSE approvals, reports and documents relating to the project, in particular those relating to TP 6 A & B;
- undertaking a site tour;
- reviewing regulatory issues and concerns including enforcement actions, public complaints, and the NSE response to complaints and concerns;
- reviewing all press clippings that are posted on the PWGSC list as a means of gauging public opinion;
- notifying the public of the role of our Board (by posting a copy of our first report on the NSE web site) and making ourselves available to receive questions or comments relating to our regulatory oversight activities; and
- attending many of the EMC meetings to obtain project updates and gauge progress of the project.

Specifically the Board has reviewed in a general manner the various project components and their status. An overview of this information is contained in the semi-annual reports which were prepared by NSE for the RMOB and which summarize the approvals issued to date, the project status, correspondence, emergency calls, site audits, departmental response to complaints/inquiries, compliance/non-compliance issues, monitoring data and committee participation. Appendix A provides a summary of the various Tar Pond and Coke Oven project elements, the status of the associated NSE part V approvals and the status of the construction activities.

A particular focus for the RMOB this year was to audit the NSE monitoring and compliance activities relating to their approvals for TP6A; Flow Diversion System and TP6B; Solidification, Stabilization and Channel Construction, the associated Design Element reports and the relevant sections of the Environmental Management Plan and Environmental Protection Plan.

4. Update on 2009 Issues / Findings

In our first RMOB report to the Minister we identified four issues and findings. The following section provides an update on each of these points.

a) NSE as Regulator

Based on the information we reviewed during 2008-09 we identified that NSE was effectively regulating the project and making informed decisions based on sound technical information. The level of scrutiny and regulatory attention was above and beyond anything that would be expected for any other project in NS or possibly Canada. We felt that the public should have confidence that the NSE is taking "due care" to protect the environment.

-During this past year the RMOB did not identify any information that would alter our opinion or indicate that the NSE approvals issued to date and the associated criteria (relating to air monitoring, leachate and compressive strength) were not appropriate to the project,

-In addition, we evaluated the NSE inspection and monitoring activities and feel these are appropriate to the project (see also Section 7).

b) NSE Capacity

NSE, like all the project partners, has dedicated considerable staff and resources to this project. To date, they have staffed a dedicated team of seven individuals in the Sydney office including a Senior Manager, Senior Engineer, two Inspector Specialists, two Junior Engineers, and an Administrative Assistant. The Sydney staff is complemented, as required, by a number of technical specialists in the Halifax regional office.

As NSE staff gains more knowledge, experience and understanding of the project, their capacity should continue to increase. NSE complements their internal team with external experts on an as required basis.

In our opinion, NSE should be commended on their commitment of resources to this project as well as the quality of the individuals that have been added to their team.

-Over the past year there has been a significant shift in the NSE activities associated with this project. As many of the Part V approvals are now in place staff is changing their focus from reviewing project proposals to monitoring project management by undertaking site inspections and investigations to ensure compliance with the Part V approvals.

-NSE staff currently undertake approximately four on-site inspections each week to ensure compliance with the Part V approvals.

-The RMOB feel that NSE has appropriate staff in place to address the ongoing requirements of this project.

c) Communications

It was apparent to the Board that all of the partners are committed to the project, however there appeared to be a need to improve the

efficiency and transparency of inter-organization interactions and communications. Due to the time pressures associated with the project, the Board felt that the current communications challenges should be promptly addressed. If these issues could not be resolved in a timely and efficient manner by the parties involved, there may be a need to employ outside expertise to facilitate a resolution.

In addition, it is important that the partners routinely clarify their individual roles as the project moves forward. Although the various parties identified that they were meeting on a fairly regular basis, there appeared to be some confusion or misunderstanding about the outcomes of some meetings. Hence, it would seem appropriate that the various parties meet on a regular formalized basis to discuss any issues relating to communications and responsibilities.

The Board felt that as the regulator, NSE has to maintain somewhat of an arms length posture while attempting to keep the lines of communication open with other organizations and the public.

With respect to meeting project timelines, the Board received information which indicated that NSE was reviewing the project documents at various stages in their development and that all Part V approvals have been completed within the required review periods.

-During the past year the RMOB has reviewed a number of documents and received comments from the various project partners which identified that there has been a significant improvement in interagency communications and working atmosphere. This improvement may relate to the stage of the project where many of the plans and approvals are now in place, a number of the contracts have been awarded, and on-site work is underway on a number of the project elements. This improvement may also relate to some of the organizational changes which have occurred in the past year.

-A number of project committees (such as the Regulatory Management Committee and Environmental Management Committee) are in place to facilitate and promote effective communications between the partners. The RMOB reviewed the terms of reference and minutes from a number of these meeting and

feel that these committees are a constructive forum for discussing and addressing outstanding issues.

d) Memorandum of Agreement

The Board felt that the MOA dealing with regulatory issues was an important document which will be a key in the ongoing compliance monitoring of the Project. This document identifies NSE as the lead agency for enforcement matters with Environment Canada enforcing appropriate federal regulations. It is expected that the majority of the enforcement responsibilities will fall to NSE as they will relate to the terms and conditions of the Approvals issued by NSE.

The agreement identifies that federal advice on environmental and regulatory matters will be conveyed through the EMC and communicated to Nova Scotia by the Government of Canada, Co-chair of the EMC.

Not withstanding the MOA, we felt it was important that NSE continue to work closely with EC, as the lead federal regulator, as they are in a position to provide moral and technical support. In addition, this cooperative approach would help avoid possible duplication of effort. We also felt it was important that the EMC continue to meet regularly and function as a forum for dealing with all environmental issues, particularly those relating to regulatory compliance.

-Based on comments received by the RMOB from NSE and PWGSC staff, this MOU appears to be functioning as a constructive format for the coordination of regulatory issues. Note that PWGSC and NSTIR participate with STPA in the Regulatory Management Committee discussions as they are the project funding agencies.

-Enforcement activities associated with the project are somewhat clearer now that many of the approvals are in place. NSE remains the primary regulator for ensuring compliance with provincial environmental legislation and their Part V approvals while EC is the lead for enforcing federal legislation.

-NSE and EC enforcement staff communicate through a somewhat formal or arms-length process which allows each the flexibility to

enforce their requirements using their independent compliance formats.

-NSE and EC staff have a number of options for communicating and exchanging information. Specifically both participate regularly in EMC meetings, NSE provides project correspondence directly to EC while EC provides project correspondence to NSE through PWGSC. NSE has also debriefed EC on specific topics as deemed appropriate (e.g. south pond oil release).

5. Public Input

As outlined in the RMOB "Terms of Reference", one of our tasks is to consider public input and provide the public with an opportunity to provide feedback on regulatory issues. Following from this our role and activities have been made public on several occasions over the past two years and a link to the Board is in place on the NSE TP web site.

To date, we have not received any comments or input from the public either directly or through the web site. We did, however, receive one call from the Cape Breton Post following the release of our first report last year. In addition, we received another request for information from a university professor in western Canada on the role of the RMOB. Both of these requests for information were promptly addressed.

The RMOB will continue to accept and address public comments on an as required basis.

6. NSE Approvals for TP 6 A and B

During the year the RMOB reviewed a number of documents relating to development of the TP 6 A and B, Part V approvals and associated criteria. Our review included the design documents, the project Environmental Management and Environmental Protection Plans, the air monitoring program, and the pilot scale testing and criteria development (leachate, reworking, compressive strength, etc.). We

also reviewed some of the technical comments provided to, and received by, NSE relating to their project criteria and approvals.

Based on this review, it appears that only a couple of issues remain outstanding relating to air monitoring. These include the influence of humidity on the real-time monitoring equipment, and the inclusion of a real-time monitoring network due to concerns related to the health risks associated with PM 2.5 particles. Currently STPA has modified the real-time monitoring program to address the humidity issue and has undertaken a two year real-time study to evaluate the presence of PM 2.5 in the air shed.

Comments received during our discussions suggest that the above approaches are likely appropriate for this project.

-The RMOB feels that NSE staff and project partners have worked hard in developing, reviewing and negotiating the various project plans and requirements. Based on our review we did not identify any documents or receive any comments which would indicate that the approvals or associate criteria were not appropriate for this project. The partner agencies seem generally satisfied with the overall NSE approval process and the content of the subsequent approvals.

-Based on our analysis the RMOB feels that the NSE approvals are comprehensive and appropriate for the various project components and will provide adequate protection for the environment and human health.

7. NSE Monitoring and Enforcement

NSE has developed and implemented a comprehensive compliance monitoring and enforcement process for this project. This program includes;

- a clear division of staff responsibilities,
- staff may, as required, meet with contractors and other project partners during onsite inspections,
- inspection reports are prepared for each site visit,

- all reports and comments are provided to STPA for review and action, as required,
- internal checklists are available for use, as required,
- staff may review the Contractor's environmental inspection logs which are completed every 4 hours as per the EPP,
- staff undertake a minimum of four (4) on-site inspections each week,
- staff verify compliance against the tables which are contained in NSE approvals,
- staff routinely review the air monitoring reports,
- a tracking system (ATS) is employed to document inspections and complaints, and
- a "reportable incidents" protocol has been developed to guide monitoring activities.

-The RMOB feels that NSE's compliance and monitoring program is comprehensive and appropriate for this project. It should be noted that few if any other projects in Nova Scotia, or possibly Canada, receive this level of attention.

8. Reported Incidents

Several incidents have occurred which were not in compliance with the NSE requirements. These include;

Ambient Air Monitoring Exceedances:

May 1, 2009, Curry's Lane,
June 18, 2009, Curry's Lane,
August 17, 2009, Intercolonial St,
Sept 15, 2009, Intercolonial St.

Turbidity Exceedances:

July 6, 2009 – Exceedance at CO5,
Feb. 23, 2010 – Non-conformance report issued by STPA.

Spills/releases:

Sept 2, 2009 - Oil spill into south pond,
Oct. 28, 2009 - Water discharge at Ferry Street,

Jan. 27, 2010 - Diesel release at pump station at Coke Oven Brook,

Several minor hydraulic leaks from equipment were reported (all were below the NSE 100 litre reporting requirement).

The follow-up approach used by NSE included:

Formally reviewing these incidents,

Formally investigating most incidents, as required,

Issuing one warning ticket – for an air monitoring issue,

Issuing one directive letter – for an air monitoring (humidity) issue.

9. Project Checks and Balances

In addition to the NSE compliance monitoring and enforcement program, STPA and their contractors and PWGSC and their contractor have in place comprehensive monitoring programs relating to technical aspects, project safety and environmental requirements (see Appendix B). These programs are aimed at ensuring that the various contractors undertake their work in accordance with the various project requirements and approvals.

It should also be noted that the contractors also have detailed monitoring and inspection programs in place to verify that they are actually undertaking their work in accordance with the contract requirements. This is a key point as the contract specifications for the most part are performance based and payments are linked to meeting the project specifications.

10. RMOB Findings for 2009/10

a) NSE as Regulator

Based on the information reviewed by the RMOB during the past year we continue to conclude that NSEL is effectively regulating the project and enforcing the requirements included in their Part V approvals. We feel that the public should have confidence that the NSE is taking "due care" to protect the environment.

b) NSE Capacity

In our opinion, NSE has appropriate staff and resources in place to effectively enforce their legislation and the requirements of their Part V approvals.

c) NSE Monitoring and Enforcement

As mentioned, NSE and the various project partners have comprehensive programs in place to monitor the various project activities. While there is always the potential for problems or accidents, the level of oversight should ensure that these are quickly identified and systems are in place to communicate and address these situations.

With all of the other partner checks and balances in place, it would be easy for NSE to rely on the monitoring of others. In our opinion, this is not the case and NSE staff are committed to their inspection program and maintaining their regulatory oversight role.

Appendix A - Project status table.

Element	Part V Approval	Construction Status
CO2	27-Mar-08	• S/S complete and site capped • Final Report received and under review
CO5	02-Jul-08	• Cut off walls installed • Surface finish remains
CO6	24-Oct-08	• Planned commencement – April 2010
CO7	24-Jul-08	• Construction has commenced • Combined with Element CO8 • Planned completion – June 2010
CO8	16-Jan-09	• See CO7
CO9	On Hold	• Existing SYSCO landfill to be used • NS Lands Approval amended
CO1	19-Oct-09	• Planned commencement – winter 2010
TP2 (Construction)	04-Apr-08	• Construction complete
TP2 (Operation)	Part V Application – 17-Feb-10	• Application received and under fourteen day review for completeness
TP6A	08-Dec-08	• South Ponds pump around operational
TP6B	03-Apr-09	• 88 Cells complete. Re-commence planned for mid to end March 2010
TP6C	08-Oct-09	• Planned commencement – April 2010
TP7	Part V Application – 22-Feb-10	• Application received and under fourteen day review for completeness

Appendix B

1. Monitoring by STPA and their Contractors (provided by STPA)

a. Construction activities

All activities are undertaken on an element basis. Each element has an approved Environmental Protection Plan which includes inspection, monitoring and reporting. These inspections are conducted by the contractors on a 4 hour schedule and the reports (Environmental Inspection Logs) are reviewed and approved by the Construction Oversight Engineer prior to being delivered to the Agency as record documents.

In accordance with the commitments made in the Project environmental management documents, if an issue or incident arises, it is reported to the construction oversight engineer and the Agency immediately.

b. Air Monitoring

Monitoring is undertaken on a two phase approach by an independent air quality consultant. The two phases are time weighted average based ambient air monitoring conducted at 6 fixed stations in the community around the site(s). This activity follows the National Air Pollution Surveillance (NAPS) schedule and sampling is conducted once every 6 days for a 24 hour period. (NAPS is a joint federal provincial program relating to national ambient air quality monitoring.)

Real-time monitoring is also conducted with a portable hand held analyzer when conducting intrusive (soil moving) activities.
This monitoring captures dust (PM10) and VOCs. It is conducted for a minimum of 30 minutes out of every hour activity is ongoing and during the first hour after shutdown of the activity.

Air monitoring for real-time activities is reported to the Agency daily (the next day) and is posted to the Agency website and made available to the public through the storefront library upon receipt. In addition, monthly reports are provided as well as annual summary reports and annual statistical reports of results and activities.

The Independent Quality Assurance Consultant employs a staff of approximately 26 persons to run the program. The Agency has 3 people directly involved in running this program which involves issues such as design and implementation of the program as well as field checks of operational activities.

Ambient Stations:

	Victoria Road Station #1	Curry's Lane Station #2	Henry Street Station #3	Alexandria Street Station #4	Intercolonial Street Station #5	Desbarres Street Station #6
PAH	X	X	X	X	X	X
VOC	X	X		X	X	X
PM10	X	X		X		X
Metals		X		X	X	
TSP		X		X	X	
PCB				X	X	X
PM2.5	X		X	X		

Note: The Alexandria Street Station was relocated Jan 10. The new station location has been selected based on professional input indicating the data set will not be negatively affected.

Table 2: Summary of PM10 Action Levels

	Action Level (g/m3)	Monitoring Location	Action Required if Level Exceeded
15 Minutes	100	@ Downwind fence line.	Consultant to notify contractor and Agency. Site continues to operate. Monitoring of dust generating activities and modifying of procedures including additional watering.
15 Minutes	155	@ Downwind fence line.	Consultant to notify contractor and Agency. Temporary stop work practices will be evaluated. The Contractor, Consultant and STPA will evaluate work practices, and techniques to reduce dust will be identified and implemented. Work will resume within a short time period when revised procedures are implemented.
10 Hours	990 g/m3 per 10 hrs (1)	@ Downwind fence line.	Hourly averages will be totalled during the workday. Consultant will notify the Agency when 65% of the daily dust budget (643.5 ug/m3) is reached and/or exceeded. If the daily dust budget of 990 ug/m3 is exceeded, the Consultant is to notify the Agency and Contractor. Site activities will be terminated for the day.

Notes:
(1) 990 g/m3> (Budget to that point)+(highest hourly average that day)+33 g/m3 x (remaining work hrs-1hr)

(2) In accordance with EPP, if the level of dust budget for a given day reaches 65% the Agency notifies NSE, as well, if an exceedance occurs the Agency notifies NSE.

Table 3: Summary of VOC Actions Levels

Average Period	Action Level (ppm)	Monitoring Location	Action Required if Level Exceeded
15 Minutes	.66 ppm	@ Downwind fence line	Implement Draeger-Tubes to access benzene contamination. The presence of naphthalene should be detected by olfactory means at 1ppm concentration or less (1) (2) Consultant to contact the Agency and the contractor.
10 hours	Running daily total of 8.0 ppm (based on 2 downwind samples taken every hour during site activity)	@ Downwind fence line	Consultant to contact Agency and Contractor when 65% of running daily total is exceeded (5.2 ppm). When running daily total of 8.0 is reached, Consultant to contact Agency and Contractor. Work for day shall be terminated and mitigative measures to control emissions shall be implemented.

Notes:

(1) Should benzene or naphthalene not be indicated, steps should be taken to limit emissions and activities to continue provided PID readings remain below 0.66 ppm.

(2) If an additional exceedance occurs, Draeger-tubes should be used again to assess the relative contribution of benzene.

Reporting:

	Daily	Monthly	Annual	Annual Statistical
Ambient Results		X	X	X
Real-time Results	X	X	X	X

Notes:

(1) Exceedances to real-time criteria are reported to NSE immediately upon the Agency being notified.

(2) Noise monitoring is conducted periodically during construction in accordance with element Approvals. When undertaken, reporting is daily.

c. Environmental Effects Monitoring

Environmental Effects Monitoring is undertaken using a two phased approach using the services of an Independent Environmental Effects Monitoring and Surface Water Compliance Consultant, (IEC) Dillon. Surface water, ground water, soil and marine aspects are monitored under this program.

Sampling and analysis is conducted either monthly, quarterly or annually and results are reported either monthly, quarterly or annually. For example, surface water samples are collected and reported as a part of a monthly report while marine sediment samples are collected and reported on an annual basis.

The IQAC employs a staff of approximately 17 persons to run the program. The Agency has 2 people directly involved in running this program which includes things such as design and implementation of the program as well as field checks of operational activities.

Table; Effects Monitoring

Surface Water	**Frequency**
Compliance Monitoring at Battery Point, SW sample (PAHs, Aroclor PCBs, TPH/BTEX, Metals, mercury, Turbidity, Gen Chemistry, Flow estimate	Monthly
Events triggered by Turbidity	As triggered
Data collection and monitoring of Surface Water level, velocity, flow, precipitation, wind speed and wind direction.	Continuous
Groundwater	Frequency
Baseline Tar Ponds; Groundwater level Monitoring & Sampling	Quarterly
Baseline Coke Ovens; Groundwater level Monitoring & Sampling	Quarterly
Groundwater Level Logging	Continuous,
Marine	Frequency
Water Quality sampling	Annually
Sediment Composite samples – Grab samples	Annually
Sediment Composite samples- Sediment Trap samples	Quarterly
Caged Bivalve Monitoring	Annually
Crab Tissue Monitoring	Annually
Benthic Community Monitoring	Annually

Reporting:

	Monthly	**Quarterly**	**Annual**
Surface Water	X	X	X
Groundwater		X	X
Marine			X

Notes:

(1) As committed under the Project EPP, annual avifauna monitoring and reporting was undertaken after construction. This type of monitoring was also undertaken during construction.

(2) The Agency also employs two full time staff members who monitor and inspect the site daily. Their responsibilities include the following specific sampling and reporting functions:

Material Handling Pad	Frequency/Report	
Samples of water collected prior to release	Monthly/ as needed	Receipt of analysis
Off –site impacts	Frequency/Report	
Samples collected when required to ensure impacts to the site which are created off-site are identified	~monthly/ per event	Receipt of analysis

In addition to these processes, the individual contract managers also monitor and inspect their elements during construction, typically daily, reporting any issues as required

2. <u>Monitoring by PWGSC and the Independent Engineer</u> (provided by the IE)

The Independent Engineer has two staff who visit the site twice daily, spending a total of 2-3 hours on site per day. They each have their own project elements to inspect. One has TP6A, TP6B and CO2B and the other CO7/8. The sites are also divided up between two engineers, although they visit the site about once weekly.

Each staff member maintains a notebook of their observations. These notes are only used as a reference for internal purposes. Staff do not have checklists such as those used by the contractor or AECOM.

Field staff are not expected to repeat the effort of these other parties; due to resource considerations. Nevertheless their jobs are to ensure that others are doing their jobs and to confirm, through spot checks, that the project is being implemented in accordance with the specifications and the NSE approvals (which form part of the specifications). They also review the daily reports prepared by AECOM to confirm that the specified checks (e.g. environmental) are being implemented.

The engineer and the field inspector also attend the weekly or bi-weekly construction meetings where technical, financial, health and safety and environmental issues are discussed. The engineers also attend the monthly Project Implementation Plan (PIP) meetings

attended by STPA, AECOM, gov't partners where progress and issues on all projects are discussed. This permits concerns to be addressed and actions identified.

Where field personnel identify a problem, they report the problem to the IE engineer who calls the STPA contract manager to inform him or her of the issue. We normally provide STPA 24 hours to act on the issue or reply to the concern. If neither occur, and depending on the severity of the issue, a letter may be sent to STPA to raise the issue to a more formal level. If the letter is not responded to in a timely manner (appropriate timeliness being a function of the IE perception of how soon the issue will cause irreparable harm, the severity of the harm and/or the cost impact).

The IE also receives the daily air monitoring reports (real time instruments) as well drafts of the fixed station data. These are scanned for anomalies and criteria exceedances. This review would have already been performed by All-Tech therefore the IE scan is a confirmation.

In summary, the IE reviews in many ways mirror the inspection and monitoring role of others, but at a less intense and formal level. The primary job of the IE is to ensure that others are performing their tasks.